CAPITAL REGION
WATER

July 7, 2017

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
601 D Street NW
Washington, D.C. 20004
Re: DOJ No. 90-5-1-1-10157

RE: Civil Action No. 1:15-CV-00291-WWC: Paxton Creek Interceptor Rehabilitation Schedule Impacts/Delays

Dear Ms. Flickinger:

This letter is to inform the Department of Justice of project impacts that will delay Capital Region Water's (CRW) completion of work covered under our Partial Consent Decree. Specifically, the first phase of interceptor rehabilitation work identified in Paragraph 31.a (Paxton Creek Interceptor) has an established date for completion of construction by December 31, 2017.

Following the completion of intensive cleaning of CRW's interceptor system, it was discovered that a substantial number of pipe defects had been obscured from view by sediment deposition during the initial assessment in 2014. The 2014 assessment by RedZone Robotics formed the basis of the project limits and Partial Consent Decree work schedule.

Attached, please find a May 3, 2017 technical memo from CDM Smith detailing the additional findings and revised post-cleaning recommendations. In short, the Paxton Creek Interceptor rehabilitation length was increased by 46%, and the estimated construction cost has increased from $3.7MM to over $12MM.

CRW has advertised the project for construction, and the anticipated construction schedule is between October 2017 and December 2018 (schedule attached).

The work in the Paxton Creek Interceptor is the first phase of a multi-year interceptor system rehabilitation program. CRW has incorporated the expanded post-cleaning findings into the subsequent phases of the program, and though the completion of the first phase will be delayed, the overall program will be completed on schedule. We have already initiated the design of the Phase 2 Improvements (Asylum Run and Front Street Interceptors) and plan to advertise those projects for construction later this year.

This matter was discussed during our last technical issues meeting with EPA and PADEP on May 23, 2017, and we wanted to document officially now that we have a firm schedule. CRW appreciates the support and understanding of DOJ, EPA and PADEP as we continue to work diligently to address decades of deferred maintenance, while planning long-term water quality improvements.

Please contact me directly to discuss any question or concerns you may have.

Sincerely yours,

Dave W. Stewart, P.E., BCEE
Director of Engineering

cc: Deane Bartlett, EPA Region III
Steve Maslowski, EPA Region III
Nels Taber, PADEP SCRO
Maria Bebenek, PADEP SCRO
Shannon M Gority, P.E., CEO, CRW
Claire Maulhardt, P.L.A., CRW
Steven Hann, Esq.
John Aldrich, P.E., D.WRE, CDM Smith

CDM Smith

Memorandum

To: *David W. Stewart, P.E., BCEE*

From: *Marc Lehmann, P.E.*
Randall Henne, P.E., BCEE
John Schroeder, P.E., BCEE

Date: *May 3, 2017*

Subject: *Capital Region Water Interceptor Cleaning and Rehab Improvements Update*

Background

During 2014, CRW contracted with Redzone Robotics to inspect all of the interceptors in the combined and separate sanitary sewer system. In February 2015, CDM Smith reviewed the inspection results and developed recommendations for additional cleaning (primarily based on sonar data), further inspection, and anticipated rehabilitation requirements of the interceptors based upon the CCTV data and laser profiling data. The proposed dates and priorities for cleaning and interceptor rehabilitation were incorporated in the partial consent decree.

In 2015, CDM Smith developed plans and specifications for the interceptor cleaning project, which was bid during September and October 2015. The contract was awarded to Terra Contracting in January 2016 with a contract end date of December 31, 2016. Terra began cleaning activities in late June 2016, and completed the work in early March 2017. A total of 35,700 linear feet (LF) of interceptor were cleaned and approximately 1,500 cubic yards (1,800 tons) of debris were removed. Summaries of the footage that were cleaned and inspected are presented in Table 1.

As the cleaning contractor completed its cleaning operations, they inspected each section of the interceptor with sonar and CCTV. CDM Smith reviewed the post-cleaning inspection results to reassess the proposed interceptor rehabilitation scope, budget, and schedule that was originally estimated in the February 2015 memorandum. An updated discussion, mapping, cost estimates, and prioritization of improvements is provided herein.

Post-Cleaning Inspection Results

The post-cleaning inspections provided higher quality video and additional pan and tilt video with more detail, that enabled us to better evaluate the existing conditions. In some cases, this resulted

Table 1: Interceptor Cleaning Summary

Diameter (inches)	Front Street Interceptor (LF)	Hemlock Street Interceptor (LF)	Paxton Creek Interceptor (LF)	Paxton Creek Relief Interceptor (LF)	Spring Creek Interceptor (LF)	Total (LF)
18				213		213
24		1,143				1,143
30	3,203		363			3,565
36				66		66
42			76			76
48				6,033		6,033
60			2,209			2,209
34 X 32					655	655
39 X 36	4,494					4,494
42 X 42	4,276					4,276
48 X 59			7,266			7,266
60 X 72			5,739			5,739
Total	**11,973**	**1,143**	**15,651**	**6,312**	**655**	**35,734**

in modifying or expanding the scope of the proposed improvements for sewer and manhole rehabilitation.

The primary reasons for the additional recommended rehabilitation areas are:

- There were naming and coding inconsistencies with the RedZone data. With more updated CRW GIS information the cleaning contractor was able to provide more accurate asset condition information.
- The video from the RedZone data was the result of a "fish eye" lens. This can distort the view of sewer defect. When the cleaning was performed, different equipment was used and allowed the contractor to pan and tilt the camera to get a better perspective of each sewer defect.
- The data submissions from RedZone were difficult to navigate. There were seven submittals delivered at different times that were not always complete and included data from other submittals. Exports of condition assessment information from the ICOM3 database that RedZone utilized did not necessarily correlate with the PDF sonar and laser reports.

Overall, additional areas were recommended for rehabilitation within the Paxton Creek Interceptor and the Front Street Interceptor, as summarized below.

Paxton Creek Interceptor

In 2015, CDM Smith recommended approximately 8,800 linear feet (LF) of the Paxton Creek Interceptor for rehabilitation or replacement with a recommended completion date of the end of 2017. After reviewing the more detailed post-cleaning inspection results, CDM Smith determined that several additional sections of Paxton Creek Interceptor will also require rehabilitation that increased the rehabilitation length by about 46%, which are detailed in a separate memorandum.

Additionally, the dimensions of the pipe were updated based on the post-cleaning inspections. In several pipes this increased the pipe cross section from 48-in by 59-in to 60-in by 72-in.

Front Street Interceptor

The preliminary scope of improvements for Front Street Interceptor Sewer was divided into two phases:

- Phase 1: 1,933 LF of 30-inch circular pipe
- Phase 2: 8,248 LF of 30-inch to 40-inch non-circular pipe

A portion of the Front Street Interceptor RedZone data was not available at the time of the 2015 recommendations; and now after review of this data it is recommended that the following be incorporated in the scope of Phase 1 listed above.

- Phase 1.1 (new in 2017): 2,400 LF of 36-inch high by 30-inch wide semi rectangular pipe

This section of the Front Street Interceptor experiences full-length corrosion as seen from the protruding surface aggregate as well as some root intrusion, which is shown in Figure 1.

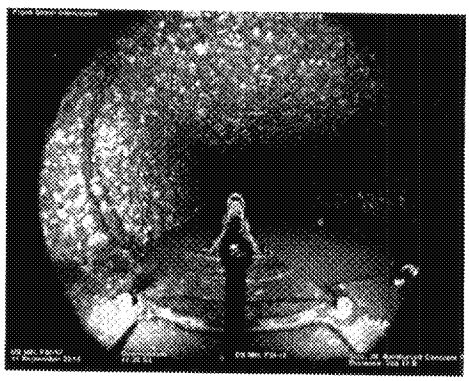


Figure 1: Surface aggregate protruding along Phase 1.1 Front Street Interceptor Sewer

Interceptor Rehabilitation Mapping

The enclosed *2015 vs. 2017 Interceptor Sewer Comparison* map illustrates the locations of:

- Large Diameter Interceptor Cleaning Project (completed in early 2017)
- 2015 rehabilitation/replacement recommendations
- Additional Paxton Creek Rehabilitation recommendations
- Additional Front Street Interceptor Rehabilitation recommendations.

The map also depicts the start and stopping points of cleaning, rehabilitation, and replacement recommendations, as well as the changes in diameter that were not known in 2015.

Interceptor Improvements Cost Estimates

The conceptual level construction cost estimates presented in the February 2015 memorandum were focused on the rehabilitation. A contingency of 25% was recommended to be added to the rehabilitation construction cost estimates. The extent of bypass pumping was not known. These initial estimates also did not include engineering costs.

Throughout the course of the rehabilitation design for the Paxton Creek Interceptor, CDM Smith has been developing detailed construction costs for the alternatives and other items including bypass pumping, mobilization/demobilization and traffic control. In particular, the bypass pumping costs will be significant due to the number of CSO regulators and the complexity of their connections.

Throughout the rehabilitation designs we will be considering alternative bids with different technologies. For example, on some of these unique shaped pipes and smaller interceptors (30" x 36" rectangular with low flow channel), it may be best to line with CIPP and accept that there may be some interior wrinkles after it is cured but still maximize capacity and be fully structural.

Tables 2, 3, 4, and 5 provide a detailed comparison of the proposed rehabilitation scope, schedule and construction costs for each interceptor versus the initial 2015 estimates. For the Paxton Creek Interceptor project we have provided estimates with and without the siphons included.

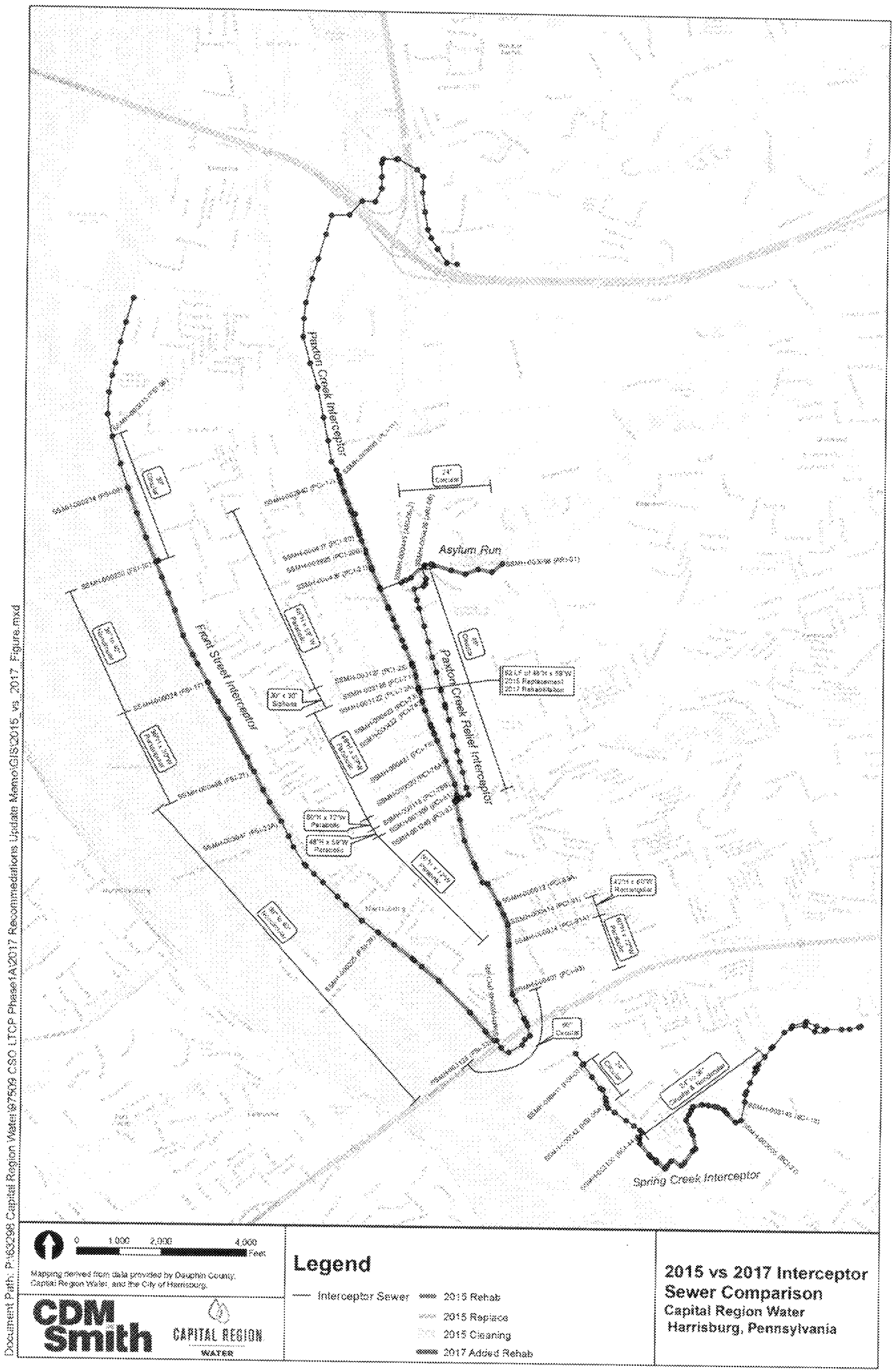


TABLE 2: PAXTON CREEK INTERCEPTOR

Pipe Rehabilitation			Initial Construction Cost Estimate & Schedule (February 2016)				Updated Construction Cost Estimate, Schedule, & Approach (May 2017)						
Previous MH IDs	New Manhole IDs	Pipe Size (in)	Approximate Length (ft)	Cost per Foot	Cost Estimate	Construction Completion Date	Approximate Length (ft)	Cost per Foot	Cost Estimate	Construction Completion Date	Rehab Priority	Rehab Technology	Comments
PCI 20-20B; PCI 21-28; PCI 71-72A; PCI 73-76A; PCI 76A-76B; PCI 76B-81; PCI 81-88A	SSMH-000437 to SSMH-002925; SSMH-000439 to SSMH-003127; SSMH-003126 to SSMH-003122; SSMH-000423 to SSMH-000020; SSMH-000020 to SSMH-003118; SSMH-003118 to SSMH-003309; SSMH-003309 to SSMH-000012	48" h x 69" w parabolic *(portions updated to 66" h x 72" w in 2017 are shown in red)*	8,737	$ 400	$ 3,495,000	12/31/2017	5,500 (of 48"x69")	$ 500	$ 2,800,000	10/31/2018	1	Cement Spray-on/ Geopolymer	
							3,232 (of 66"x72")	$ 600	$ 1,939,300				Several pipe segments are actually 60"w x 72"h based on updated information. There is a transition in pipe size between SSMH-000020 and SSMH-003118
PCI 72A-PCI-73	SSMH-003122 to SSMH-000423	48" h x 69" w parabolic	92	$ 1,087	$ 100,000		92	$ 500	$ 46,000				Initial approach involved open cut replacement but internal rehabilitation has been selected based on post-cleaning inspection results.
Manhole Rehabilitation			--	--	$ 100,000		--	--	$ 120,000				Includes raising manholes to grade or abandonment.
Initial Rehabilitation Scope Subtotal			8,829		$ 3,695,000		8,924		$ 4,905,000				
PCI 12-20; PCI 20B-21	SSMH-002940 to SSMH-000437; SSMH-002925 to SSMH-000439	48" h x 69" w parabolic	*Not included in initial scope*				1,884	$ 500	$ 932,000			Cement Spray-on/ Geopolymer	Added to scope based on post-cleaning inspection condition assessment.
Pipe Rehabilitation (Added)													
PCI 28-71	SSMH-003127 to SSMH-003126	Dual 30" Siphons	*Not included in initial scope*				888	$ 110	$ 98,000			Dewater and Inspect	Intermittent cleaning contractor was only able to complete post-cleaning inspection one of the siphons due to an obstruction. Dewatering and inspection is proposed for the rehabilitation project.
								$ 1,838	$ 897,000			Open Cut Replacement	RedZone inspected one side of the siphon and was inconclusive which side was impassable. Pending further inspection after dewatering, rehabilitation may still be an option and could reduce this cost to $152,000 to $182,000.
PCI 88A-91; PCI 91A-93	SSMH-000012 to SSMH-000414; SSMH-000014 to SSMH-000407	60" h x 72" w parabolic	*Not included in initial scope*				1,836	$ 600	$ 1,102,000			Cement Spray-on/ Geopolymer	Added to scope based on post-cleaning inspection condition assessment.
PCI-91 to 91A	SSMH-000414 to SSMH-000014	42" h x 60" w rectangular	*Not included in initial scope*				387	$ 600	$ 232,000			Cement Spray-on/ Geopolymer	Added to scope based on post-cleaning inspection condition assessment. Change in shape underneath the railroad.
Added Rehabilitation Scope Subtotal							4,575		$ 3,216,000				
Revised Rehabilitation Scope Subtotal							13,499		$ 8,121,000				
Ancillary Work Items: cleaning, pre/post inspection, reinstate connections, internal point repairs, chemical grouting			*Not included in initial estimate*						$ 663,000				
Bypass Pumping									$ 3,150,000				
Rehab Mobilization / Demob.									$ 700,000				
Traffic Control									$ 50,000				
Contingency (10%)									$ 1,713,000				
Total Opinion of Probable Construction Cost with Siphons									$ 13,300,000				
Total Opinion of Probable Construction Cost without Siphons									$ 12,200,000				

TABLE 3: ASYLUM RUN INTERCEPTOR

Pipe Rehabilitation			Initial Construction Cost Estimate & Schedule (February 2016)				Updated Construction Cost Estimate, Schedule, & Approach (May 2017)					
Previous MH IDs	New Manhole IDs	Pipe Size (in)	Approximate Length (ft)	Cost per Foot	Cost Estimate	Construction Completion Date	Approximate Length (ft)	Cost per Foot	Cost Estimate	Construction Completion Date	Rehab Priority	Rehab Technology
ARI 01 to II-7	SSMH-003098 to SSMH-000445	24"	2,564	$ 200	$ 501,000	12/31/2018	2,564	$ 200	$ 501,000	12/31/2018	2	CIPP
Rehabilitation Subtotal			2,564		$ 501,000		2,564		$ 501,000			
Bypass Pumping			*Not included in initial estimate*						$ 500,000			
Rehab Mobilization / Demob.									$ 50,000			
Traffic Control									$ 50,000			
Contingency (25%)									$ 255,000			
Total Opinion of Probable Construction Cost									$ 1,306,000			

TABLE 4: FRONT STREET INTERCEPTOR

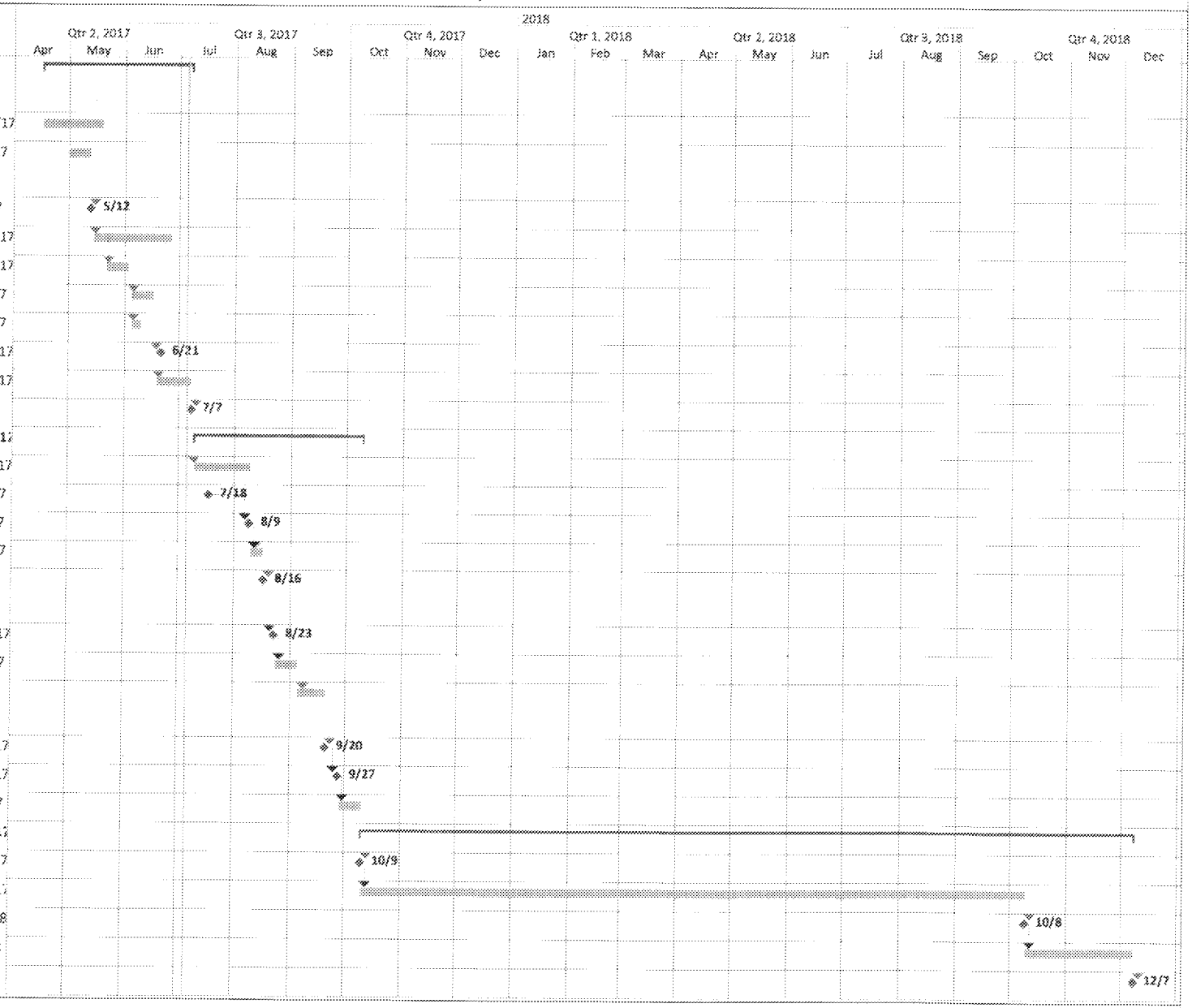
Pipe Rehabilitation			Initial Construction Cost Estimate & Schedule (February 2015)				Updated Construction Cost Estimate, Schedule, & Approach (May 2017)						
Previous MH IDs	New Manhole IDs	Pipe Size (in)	Approximate Length (ft)	Cost per Foot	Cost Estimate	Construction Completion Date	Approximate Length (ft)	Cost per Foot	Cost Estimate	Construction Completion Date	Rehab Priority	Rehab Technology	Comments
FSI 9 to 10	SSMH-000234 to SSMH-000230	30" Circular	1,933	$ 250	$ 483,000	12/31/2018	1,933	$ 250	$ 483,000	12/31/2018	2	CIPP	
FSI: 30-17; FSI 21-22A; FSI 79-33	SSMH-000230 to SSMH-000024; SSMH-000488 to SSMH-000047; SSMH-000235 to SSMH-000128	30" to 40" NC	8,248	$ 300	$ 2,474,000	12/31/2020	8,248	$ 300	$ 2,474,000	12/31/2020	3	Cement Spray-on/ Geopolymer	
Manhole Rehabilitation			--	--	$ 88,000		--	--	$ 88,000		2, 3		
FSI: 17 to 23	SSMH-000024 to SSMH-000488	96"h x 30" w/ rect. w/ low flow "v"	Not included in initial scope				2,400	$ 500	$ 1,200,000	12/31/2018	2	CIPP or Hand Spray	Added to scope based on additional RediZone data
Rehabilitation Subtotal			10,181		$ 3,045,000		12,581		$ 4,245,000				
Bypass Pumping			Not included in initial estimate						$ 2,800,000				
Rehab Mobilization / Demob.									$ 425,000				
Traffic Control									$ 50,000				
Contingency (28%)									$ 1,880,000				
Total Opinion of Probable Construction Cost									$ 9,400,000				

TABLE 5: SPRING CREEK INTERCEPTOR

Pipe Rehabilitation			Initial Construction Cost Estimate & Schedule (February 2015)				Updated Construction Cost Estimate, Schedule, & Approach (May 2017)					
Previous MH IDs	New Manhole IDs	Pipe Size (in)	Approximate Length (ft)	Cost per Foot	Cost Estimate	Construction Completion Date	Approximate Length (ft)	Cost per Foot	Cost Estimate	Construction Completion Date	Rehab Priority	Rehab Technology
SCI 22 to 63 C or "84" per GIS	SSMH-003005	24"- 36" C & NC	5,317	$ 250	$ 1,329,000	6/30/2023	5,317	$ 250	$ 1,329,000	6/30/2023	4	Cement Spray-on/ Geopolymer
Manhole Rehabilitation			--	--	$ 50,000		--	--	$ 50,000			
Rehabilitation Subtotal			5,317		$ 1,329,000		5,317		$ 1,329,000			
Bypass Pumping			Not included in initial estimate						$ 500,000			
Rehab Mobilization / Demob.									$ 133,000			
Traffic Control									$ 20,000			
Contingency (35%)									$ 498,000			
Total Opinion of Probable Construction Cost									$ 2,500,000			

CRW PCI Sewer Rehab - Proposed Schedule

ID	Task Name	Duration	Start
1	**PCI Sewer Rehab Final Design w/o Siphons**	**68 days**	**Mon 4/17/17**
2	90% Plans and Specs	25 days	Mon 4/17/17
3	General Permit (GP-11) Application	10 days	Mon 5/1/17
4	Submit GP-11 Applic	0 days	Fri 5/12/17
5	General Permit Appr	31 days	Mon 5/15/17
6	Final Cost Estimating	10 days	Mon 5/22/17
7	CRW Review of Bid D	10 days	Mon 6/5/17
8	Internal Tech Review	5 days	Mon 6/5/17
9	Final CRW Review Mt	0 days	Wed 6/21/17
10	100% Contract Docs	15 days	Mon 6/19/17
11	Bid Ready	0 days	Fri 7/7/17
12	**Bidding**	**66 days**	**Mon 7/10/17**
13	Advertise for Bids	23 days	Mon 7/10/17
14	Pre-Bid Meeting (10	0 days	Tue 7/18/17
15	Bid Opening (2 PM)	0 days	Wed 8/9/17
16	Bid Review	5 days	Thu 8/10/17
17	Recommend Award to Board	0 days	Wed 8/16/17
18	CRW Board Mtg Awa	0 days	Wed 8/23/17
19	Notice of Award	8 days	Thu 8/24/17
20	Review Agreement/ Bonds/Insurance	11 days	Tue 9/5/17
21	Recommend NTP to I	0 days	Wed 9/20/17
22	CRW Board Mtg NTP	0 days	Wed 9/27/17
23	Notice to Proceed	8 days	Thu 9/28/17
24	**Construction**	**304 days**	**Mon 10/9/17**
25	Start Construction	0 days	Mon 10/9/17
26	Construction	260 days	Tue 10/10/17
27	Substantial Completi	0 days	Mon 10/8/18
28	Final Restoration	44 days	Tue 10/9/18
29	Final Completion	0 days	Fri 12/7/18



Project: PCIrehabSched3.mpp
Date: Thu 7/6/17

Task	Project Summary	Inactive Milestone	Manual Summary Rollup	Deadline	
Split	External Tasks	Inactive Summary	Manual Summary	Progress	
Milestone	External Milestone	Manual Task	Start-only	Manual Progress	
Summary	Inactive Task	Duration-only	Finish-only		